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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
POKRZYWA, JOSEPH R	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/425,225	SAITO, HIROYUKI	
	Examiner	Art Unit	
	Joseph R. Pokrzywa	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 12-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 12-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/24/04 has been entered.

Response to Amendment

2. Applicant's amendment received on 6/24/04 has been entered and made of record. Currently, **claims 1-7, and 12-20** are pending.

Response to Arguments

3. As discussed in the Advisory Action dated 8/27/04, applicant's arguments filed 6/24/04 have been fully considered but they are not persuasive. For completeness, the examiner will repeat the response to applicant's arguments that appeared in that Advisory Action below.

In response to applicant's arguments regarding the rejection of **claim 1**, which was cited in the Office action dated 3/24/04 as being anticipated by Isozaki (U.S. Patent Number 6,141,110), whereby applicant argues on page 10 that Isozaki fails to teach of a storage means for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power-off state in which consumption of electrical power of the recording

apparatus is restricted. Isozaki teaches in column 5, lines 36 through 40, "excitation phase data indicative of the phases excited at that time point is stored in the data area 139, and the excitation phase counter MPC indicative of that excitation phase data is outputted to and memorized in the RAM 130." Thus, information (interpreted as the excitation phase counter MPC) regarding a final excitation phase of a stepping motor is stored in the RAM 130. Further, at the same time as the storing of the excitation phase counter MPC, "the stepping motor is stopped or placed in the pause mode at step S30", as read in column 5, lines 34 through 36. With this, one of ordinary skill in the art can recognize that the stepping motor is placed in a pause mode, whereby the pause mode causes the stepping motor to stop. Thus, the pause mode can be interpreted as a power off state in the recording mode, wherein the electrical power of the apparatus is inherently restricted, since the stepping motor is stopped. Therefore, Isozaki is seen to teach that the RAM 130 stores information regarding a final exciting phase of the stepping motor upon entering a software power-off state in which consumption of electrical power of the recording apparatus is restricted, as required in the claim.

In response to applicant's arguments regarding the rejection of **claim 2**, whereby applicant argues on pages 10 and 11 that Isozaki fails to further teach of a storage means which holds information regarding the termination status indicating the presence/absence of an abnormality at the time of entering a software power-off state, and controlling based on the information regarding the termination status being abnormal. Isozaki teaches in column 5, lines 4 through 11 that the MPC has the counts of 1, 2, 3, or 4 in the case of the phases excitations of A-B, B-C, C-D, and D-A, respectively. Further, as read in column 5, lines 41 through 47, the excitation phases that are to be excited are fixed to A-B phases. Thus, if the stepping motor is in

any of the phases excitations of B-C, C-D, or D-A upon starting a recording operation after being stopped in a pause mode, the MPC stored in the RAM 130 would have values of a 2, 3, or 4. This can be interpreted as information regarding the termination status that indicates the presence or absence of an abnormality at the time of entering the power off state. Further, as seen in Fig. 4, and read in column 5, line 48 through column 6, line 5, the system is controlled based on the MPC values stored in the RAM 130.

In response to applicant's arguments regarding the rejection of **claims 4 and 5**, whereby applicant argues on page 11 that Isozaki fails to teach of a sensor which either detects whether the driven member moves by a predetermined number of pulses when the predetermined number of pulses is applied to the stepping motor at the standby position or detects a rotation amount or a corresponding value of the stepping motor during the software power-off state. Isozaki teaches of a sensor (being interpreted as the excitation phase counter MPC), that detects if the stepping motor needs to driven a number of pulses, as seen in Fig. 4, and read in column 41 through 62. Thus, if the MPC is not a "1", then "the stepping motor is driven by additionally exciting the excitation phases forcedly" until the MPC value changes to a "1". This can be interpreted as detecting the number of pulses needed when restarting the excitation of the stepping motor.

4. Therefore, the rejection of ***claims 1-7, and 12-18***, as cited in the Office action dated 3/24/04 under 35 U.S.C.102(e), as being anticipated by Isozaki, is maintained and repeated below. Further, for the same reasons discussed above, the rejection of dependent ***claims 19 and 20***, under 35 U.S.C. 103(a), as being unpatentable over Isozaki in view of Cronch *et al.* (U.S. Patent Number 4,706,008), is also maintained and repeated below.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 1-7, and 12-18** are rejected under 35 U.S.C. 102(e) as being anticipated by Isozaki (U.S. Patent Number 6,141,110, cited in the Office action dated 3/24/04).

Regarding ***claim 1***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power of the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), and control means (CPU 110) for starting excitation of the stepping motor based on the information regarding the final excitation phase, read out from the storage means (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), without performing phase alignment of the stepping motor, when the recording apparatus restarts from the software power off state (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 2***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising storage means (RAM 130) for storing and

holding information regarding a final exciting phase of the stepping motor (excitation phase data) and information regarding a termination status (excitation phase counter MPC, column 4, line 62 through column 5, line 11) indicating the presence/absence of abnormality (column 5, lines 43 through 58, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, since the recording operation are fixed to A-B phases, having a MPC of "1", see Fig. 2) at the time of entering a software power off state (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), and control means (CPU 110) for, when the recording apparatus restarts from the software power off state, starting excitation of the stepping motor based on the information regarding the final exciting phase, read out from the storage means, without performing phase alignment of the stepping motor when the information regarding the termination status is normal (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and performing phase alignment of the stepping motor when the information regarding the termination status is abnormal (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 3***, Isozaki discloses the apparatus discussed above in claim 2, and further teaches that the control means starts the phase alignment of the stepping motor based on the information regarding the final exciting phase when the information regarding the termination status is abnormal (column 5, lines 43 through 62, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, therein being "no" in S50).

Regarding ***claim 4***, Isozaki discloses a recording apparatus provided with driving means for driving a member to be driven as a driving source for a stepping motor (see abstract),

comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), a sensor (excitation phase counter MPC), the sensor detecting whether the driven member moves by a predetermined number of pulses when the predetermined number of pulses is applied to the stepping motor at a standby position (column 5, lines 4 through 40, when the apparatus is placed in the "pause mode"), and control means for applying the predetermined number of pulses based on the information regarding the final exciting phase, read out from the storage means, without performing phase alignment of the stepping motor when the recording apparatus restarts from the software power off state, when the sensor detects movement by the predetermined number of pulses (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and for performing phase alignment of the stepping motor when the sensor does not detect movement by the predetermined number of pulses (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 5***, Isozaki discloses a recording apparatus provided with driving means for driving a member to be driven as a driving source for a stepping motor (see abstract), comprising storage means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in

step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), a sensor (excitation phase counter MPC), the sensor detecting a rotation amount or a corresponding value of the stepping motor during the software power off state (column 5, lines 4 through 40, when the apparatus is placed in the "pause mode"), and control means (CPU 110) for determining, when the recording apparatus restarts from the software power off state, an excitation phase corresponding to a position of a rotor of the stepping motor at the time of the restart, based on the rotation amount of the stepping motor detected by the sensor and the information regarding the final exciting phase read from the storage means (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and starting the excitation of the stepping motor from the determined excitation phase without performing phase alignment of the stepping motor (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 6***, Isozaki discloses the apparatus discussed above in claim 1, and further teaches that the recording apparatus is a serial type recording apparatus (see abstract, and column 4, lines 4 through 64).

Regarding ***claim 7***, Isozaki discloses the apparatus discussed above in claim 6, and further teaches that the stepping motor is one of a carriage driving motor, a print medium conveying motor, a print medium feeding motor, and a motor for driving a recording head maintenance mechanism (see abstract, and column 5, line 17 through column 6, line 22).

Regarding ***claim 12***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising means (drive circuit 150) for changing an exciting phase of the stepping motor to step-drive the stepping motor (column 4, lines 13 through

21), means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), and means (CPU 110) for starting excitation of the stepping motor based on the information regarding the final exciting phase stored in the storage means at the time of restarting from the software power off state of the apparatus (column 5, lines 41 through 62, wherein step S50 occurs when recording is restarted).

Regarding ***claim 13***, Isozaki discloses the apparatus discussed above in claim 12, and further teaches that the apparatus comprises means for aligning a mechanical phase of the stepping motor and an electrical phase when the apparatus is at a hardware power off state (column 5, lines 48 through 62, wherein the recording head 41 does not start until the phases are aligned).

Regarding ***claim 14***, Isozaki discloses the apparatus discussed above in claim 13, and further teaches of additional storage means for storing a termination status (excitation phase counter MPC, column 4, line 62 through column 5, line 11) indicating a presence/absence of an abnormality (column 5, lines 43 through 58, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, since the recording operation are fixed to A-B phases, having a MPC of "1", see Fig. 2) upon entering a software power off state in which consumption of electrical power of the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping

motor control routine seen in Fig. 4, column 5, lines 28 through 40), wherein at the time of restarting from the software power off state of the apparatus, the control means starts the excitation of the stepping motor based on the information regarding the final exciting phase stored in the storage means without performing the phase alignment by the phase alignment means when the additional storage means stores a normal termination status (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), and starts excitation of the stepping motor after the phase alignment means performs the phase alignment when the additional storage means stores an abnormal termination status (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 15***, Isozaki discloses the apparatus discussed above in claim 14, and further teaches that the control means starts the phase alignment by the phase alignment means based on the information regarding the final exciting phase stored in the storage means when the additional storage means stores an abnormal termination status (column 5, lines 43 through 62, whereby when the MPC is at "2", "3", or "4", an abnormality is indicated, therein being "no" in S50).

Regarding ***claim 16***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising means (drive circuit 150) for changing an exciting phase of the stepping motor to step-drive the stepping motor (column 4, lines 13 through 21, and column 4, line 50 through column 5, line 17), means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power by the recording apparatus is restricted (being a "pause mode", which is a power off state in the "recording mode", as the stepping motor

is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), means (CPU 110) for aligning a mechanical phase of the stepping motor and an electrical phase stored in the storage means (column 5, lines 48 through 62), a driven member (rotor 13) driven by the stepping motor (column 5, lines 18 through 22), a sensor (excitation phase counter MPC), the sensor detecting whether the driven member moves by a predetermined number of pulses from a standby position of the member (column 5, lines 4 through 40, when the apparatus is placed in the "pause mode"), and means for starting excitation of the stepping motor based on the information regarding the final exciting phase stored in the storage means to drive the driven member by the predetermined number of pulses at the time of restarting from the software power off state of the apparatus (column 5, lines 41 through 52, being "yes" in step S50, occurring when recording is restarted), without performing the phase alignment by the phase alignment means when the sensor detects that the driven member is moved by the predetermined number of pulses (column 5, lines 4 through 62), and performing the phase alignment by the phase alignment means when the sensor detects that the driven member is not moved by the predetermined number of pulses (column 5, lines 52 through 62, being "no" in S50, occurring when recording is restarted).

Regarding ***claim 17***, Isozaki discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising means (drive circuit 150) for changing an exciting phase of the stepping motor to step-drive the stepping motor (column 4, lines 13 through 21), a sensor (excitation phase counter MPC), the sensor detecting a value corresponding to a rotating amount of the stepping motor (column 5, lines 4 through 40) during a software power off state in which consumption of electrical power by the recording apparatus is restricted (being

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 19 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozaki (U.S. Patent Number 6,141,110, cited in the Office action dated 3/24/04) in view of Cronch *et al.* (U.S. Patent Number 4,706,008, cited in the Office action dated 3/24/04)

Regarding ***claims 19 and 20***, Isozaki discloses the apparatus discussed above in claims 1 and 12, respectively, but fails to expressly disclose if the storage means is a non-volatile memory.

Cronch discloses a recording apparatus provided with a stepping motor as an actuator (see abstract), comprising storage means (phase state storage 125) for storing and holding information regarding a final exciting phase of the stepping motor upon entering a software power off state in which consumption of electrical power of the recording apparatus is restricted (see abstract, and column 2, line 4 through column 3, line 27). Further, Cronch teaches that the storage means is a non-volatile memory (column 2, lines 47 through 64, and column 7, lines 29 through 40).

Isozaki & Cronch are combinable because they are from the same field of endeavor, being recording apparatuses that use a stepping motor as an actuator. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the teachings of Cronch in the system of Isozaki. The suggestion/motivation for doing so would have

been that Isozaki's memory would retain phase state information during a loss of power, thus making the system more stable, as recognized by Cronch in column 2, lines 47 through 64. Therefore, it would have been obvious to combine Cronch's teachings with the system of Isozaki to obtain the invention as specified in claims 19 and 20.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joe Pokrzywa whose telephone number is (703) 305-0146. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph R. Pokrzywa
Examiner
Art Unit 2622

jrp

Joseph R Pokrzywa

a "pause mode", which is a power off state in the "recording mode", as the stepping motor is stopped, shown in step S30 in the stepping motor control routine seen in Fig. 4, column 5, lines 28 through 40), means (RAM 130) for storing and holding information regarding a final exciting phase of the stepping motor at the time the apparatus enters the software power off state (column 5, lines 28 through 40, when the apparatus is placed in the "pause mode"), changing means (drive circuit 150) for changing the information regarding the final exciting phase stored in the storage means in accordance with a value detected by the sensor (column 4, lines 13 through 21, and column 5, line 48 through column 6, line 5), and means for at the time of restarting from the software power off state of the apparatus, starting excitation of the stepping motor based on the information regarding the exciting phase stored in the storage means (column 5, lines 41 through 62, wherein step S50 occurs when "recording" is restarted).

Regarding ***claim 18***, Isozaki discloses the apparatus discussed above in claim 1, and further teaches that the phase alignment of the stepping motor is performed in a manner so that the stepping motor is driven by a predetermined number of pulses at a self-starting region of the stepping motor as a driving region and the mechanical phase and the electrical phase of the stepping motor are identical (see abstract, and column 4, line 50 through column 5, line 62).